Broad Agency Announcement (BAA)

META-II

Defense Advanced Research Projects Agency
DARPA/TACTICAL TECHNOLOGY OFFICE (TTO)
3701 N. Fairfax Drive
Arlington, VA 22203-1714

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Part One: Overview Information

- **Federal Agency Name** – Defense Advanced Research Projects Agency (DARPA), Tactical Technology Office (TTO)
- **Funding Opportunity Title –** META-II
- **Announcement Type –** Broad Agency Announcement (BAA)
- **Funding Opportunity Number –** DARPA-BAA-10-59
- **Catalog of Federal Domestic Assistance Numbers (CFDA) –** N/A
- **Key Dates**
  - Posting Date – see announcement at www.fbo.gov
  - Proposal Due Date
    - Initial Closing – 12:00 noon (ET), June 4,2010
    - Final Closing – 12:00 noon (ET), October 12, 2010

- **Anticipated individual awards** – Multiple awards are anticipated
- **Total funding available for award** – $18.4 million
- **Types of instruments that may be awarded** – Procurement contract or other transaction
- **Technical POC:** Paul Eremenko, Program Manager, DARPA/TTO
  - Email: DARPA-BAA-10-59@darpa.mil
  - Fax: (703) 741-0634
  - Attn: DARPA-BAA-10-59

  3701 North Fairfax Drive
  Arlington, VA 22203-1714

Part Two: Full Text of Announcement

I. FUNDING OPPORTUNITY DESCRIPTION

Background

DARPA is soliciting innovative research proposals to substantially improve the design, manufacturing, and verification of complex cyber-physical systems, and particularly defense and aerospace systems such as ground combat vehicles, airplanes, and rotorcraft. Proposed research should investigate innovative approaches that enable revolutionary advances in these areas. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of practice. The proposed efforts should be structured to ultimately support the development of a complex advanced air and/or ground platform employing the new approach and demonstrating dramatic improvement in development time and cost. However, the platform development effort will be solicited and contracted separately from this BAA. The present META-II solicitation follows an earlier META solicitation (DARPA-BAA-10-21) with modified technical objectives and a fundamentally different program structure designed to enable offerors to submit innovative ideas that address only a portion of the overall program scope.

One impetus behind the META-II program is the observation that, while the complexity of aerospace and defense systems has grown considerably over the past half-century, the systems engineering approach—or, more specifically, the design, integration/manufacturing, and test flow—is little changed since its inception in the course of the Atlas missile development and Apollo programs, and its subsequent codification in MIL-STD-499. In fact, a comparison between this McNamara-vintage standard and modern best practices suggests that the same basic series of steps remain the cornerstone of our approach to developing complex systems: functional decomposition, requirements flow-down and allocation, size/weight/power minimization at the subsystem and component level as a proxy for cost minimization, and multiple integration-test-redesign loops, followed by quasi-exhaustive system-level verification testing. This framework has served the aerospace, defense, and a number of other industries well for some time, while the complexity of the underlying systems has increased by several orders of magnitude.

The duration and cost of system development efforts, however, has experienced rapid super-linear growth over time. Although a variety of theories have been proffered for the underlying cause of this alarming trend, the rapid increase in system complexity—the number of system states, quantity of components, modalities of inter-component interactions, software code size, etc.—and the frequent failure of the design organization to cope with it is a recurring theme that accompanies with increasing frequency and severity the development of most modern vehicle platforms across domains. The overarching objective of the META-II program is to devise, implement, and demonstrate in practice a radically different approach to the design, integration/manufacturing, and verification of these systems that substantially enhance the designer's ability to manage system complexity and mitigate the ill effects thereof.

Another impetus behind META-II is the observed decline in U.S. manufacturing. To this end, a principal goal of the program is to enable a shift in the product value chain for defense systems from “little m” manufacturing (i.e., fabrication) to the other elements of “big M” Manufacturing (i.e., design, customization, after-market support, etc.). Such a shift requires significant de-coupling of production from the other phases and facets of “big M” Manufacturing so as to enable its commoditization. One might term this the “foundry-style” model of manufacturing. This model is anathema to the current defense industry trend of tightly coupling design and prototyping through multiple design-build-test-redesign iterations.

The animating observation is that the advent of a foundry-style design and manufacturing process in the integrated circuit industry has led to tremendous opportunities for innovation in which the U.S. has retained the leading role in spite of the shift of much silicon fabrication capacity to off-shore foundries. This total disaggregation of the vertically-integrated chip-maker model was largely enabled by the VLSI revolution that began with the introduction of high-level-of-abstraction design principles of Mead & Conway in 1979, followed, in short order, by DARPA’s VLSI research program which began in 1980. A superficially-analogous disaggregation of the value chain in defense manufacturing can be observed among most of the principal aerospace and defense prime contractors in their divestiture of tier-one and beyond manufacturing capability. It has not, however, been accompanied by a comparable increase in innovation, exponential growth in product capability, and decrease in product development timelines. On the contrary, the defense industry has worsened in its performance in each of these areas, arguably because it has never put in place the technological enablers of a truly disaggregated value chain, thereby confining many major defense and aerospace firms to the “purgatory” between the two models.

The premise of the META-II program is specifically aimed at compressing the product development and deployment timeline by enabling the foundry-style model of design and manufacturing across the complex, heterogeneous, and physically-coupled electromechanical systems encountered in aerospace and defense. By creating a meta-representation of a system which is capable of capturing the totality of the detailed system design at varying levels of functional and logical abstraction, the system can be designed and verified entirely independently of its physical manifestation. That is to say that different “component model libraries” or “physics libraries” can be interchangeably used to instantiate a given system design. It does not mean, of course, that “design for manufacturability” is not possible or somehow undesirable in this construct. In fact, it is enabled through the introduction of design rules or design heuristics that impose constraints on the feasible set of system architectures at any given level of abstraction based on manufacturability considerations. Assuming the model libraries are of sufficient fidelity (and that the model uncertainty is known), systems can be verified to be correct-by-construction to a given probability using formal methods, before a single prototype or production unit is ever manufactured. This is similar to the model-based software development and certifiable-autocoding techniques which are quickly gaining traction, as well as the electronic design automation (EDA) tool suites for VLSI design that operate at increasingly higher levels of abstraction.

Program scope & structure

With the META-II program, DARPA is pursuing five technical areas that seek to further the vision described in the preceding pages. These technical areas are:

- Metric of complexity
- Metric of adaptability
- Metalanguage for system representation
- Design flow & tools
- Verification flow & tools

The program duration will be 12 months from the date of award. Offerors may submit proposals to one, several, or all of the technical areas detailed below. Although the technical areas are clearly inter-related, offerors are encouraged to submit separate proposals for each one or include them as priced options to their core proposal so as to enable DARPA to fund a subset of their proposed technical areas.

Although the products of META-II should be generally applicable across a variety of cyber-physical systems with substantial electromechanical content, the specific domains of interest which should be employed by proposers for calibration, validation, and sample application of their work are ground combat vehicles, airplanes, or rotorcraft.

Technical Area One: Metric of complexity

DARPA is looking for a practical, observable metric of complexity for cyber-physical systems to enable design trades, cyber-vs-physical implementation trades, and to improve parameterization of cost and schedule. The metric should possess the following attributes:

(a) readily observable—perhaps with the aid of a tool—at every level of the system from the system level down to the component level;
(b) correlate well to the effort (cost, schedule, and variance thereof) associated with system development (design, integration/manufacturing, and verification) and lifecycle sustainment (upgrades, changes, and maintenance);
(c) correlate well with actual *observed* system reliability (failures from anticipated and unanticipated modes);
(d) enable trade-offs between functionality implemented in hardware and in software, i.e., the metric should capture both types of complexity of a cyber-physical system and enable trades between the two.

The metric should be instantiated using appropriate algorithms and tools to enable its rapid calculation for a broad array of systems. Parametric relationships should be developed using credible historical data from real systems to demonstrate the superiority of the new metric over traditional size, weight, power, etc. measures for the estimation of system cost, schedule, variance of cost and schedule, and reliability.

Technical Area Two: Metric of adaptability

DARPA is looking for a quantitative metric of adaptability that can be associated with a given cyber-physical system architecture that supports trade-offs between adaptability, complexity, performance, cost, schedule, risk, and other traditional system attributes. Adaptability is defined here as the ability of a system to change easily, quickly, and inexpensively (i.e., with minimum incurrence of cost and degradation in performance) in response to a wide spectrum of anticipated and unanticipated perturbation events exogenous or endogenous to the system. The metric should possess the following attributes:

(a) readily observable—perhaps with the aid of a tool—at the system level for a wide assortment of cyber-physical systems, with a particular emphasis on electromechanical systems;

(b) correlate well to the effort (cost, schedule, and variance thereof) associated with system development (design, integration/manufacturing, and verification) and lifecycle sustainment (upgrades, changes, and maintenance) when the system is subjected to various anticipated and unanticipated perturbations.

The metric should be instantiated using appropriate algorithms and tools to enable its rapid calculation for a broad array of systems. Parametric relationships should be developed using credible historical data from real systems to demonstrate the superiority of the new metric in predicting the lifecycle cost and performance of the system when perturbed by anticipated and unanticipated stimuli.

Technical Area Three: Metalanguage for system representation

The META-II program depends on a maximally expressive yet formal language applicable across a broad range of heterogeneous constituent components as typical of a complex military system such as a ground combat vehicle, airplane, or rotorcraft. Specifically, the language must be capable of characterizing software and electromechanical components, the latter including power system, data and control system, structural, and other component domains. If the proposer chooses to have a multilingual approach, they must show how they will formally integrate the results of the heterogeneous and multiple languages. If the proposer chooses to do a single-language approach, they must show how it is sufficient to meet the described challenges. In the context of this technical area, proposers should describe a practical approach to building a component library representative of that needed to span a realistic complex military system.

The design language should enable and support the following:

(a) calculation of a complexity metric or range of metrics;

(b) calculation of an adaptability metric or range of metrics;

(c) provably effective introduction of hierarchical abstraction layers into the design process and into the resultant system architecture, and capability of dealing with the effect of "leaky"—or imperfect—abstractions;

(d) rigorous exploration and use of advanced optimization methods for large, multi-dimensional design trade-spaces;

(e) representation of the full spectrum of software and electromechanical components and the rapid assessment of the impact of different component libraries on the design and vice versa;
(f) formal manipulation needed to enable probabilistic system-level verification;
(g) encapsulation of the system design to enable build-to-print by an appropriately-equipped and configured "foundry" or manufacturing facility.

Technical Area Four: Design flow & tools

Perhaps the principal feature of META-II is a novel design flow that employs hierarchical abstraction and model-based composition of electromechanical and software components to achieve designs that are ultimately verifiable—at least in a probabilistic sense. Such a design flow must strike a delicate balance between allowing the exploration of the entire breadth of the design trade-space spanned by the component model library, while constraining the problem using appropriate design rules and manufacturability constraints, and while maintaining computational tractability in the design of very large-scale systems.

A key goal of this technical area is to be able to abstract the various manufacturing processes that will be employed to actually produce the system as a set of design rules, i.e., constraints on the design trade-space reflective of the capabilities of a particular manufacturing facility or, as termed here, "foundry." The purpose is to maximally decouple the design and manufacturing phases of product development, while enhancing the rigor of—and certainly without any compromise to—design for manufacturability.

At minimum, the design flow and enabling tools shall support:
(a) design optimization throughout the design process with respect to a complexity metric or range of metrics;
(b) trade-offs throughout the design process between complexity, traditional system attributes, and an adaptability metric or range of metrics, including trade-offs between software and electromechanical instantiations of functionality;
(c) introduction of hierarchical abstraction layers into the design process and into the resultant system architecture that can be proven effective and capable of dealing with the effect of "leaky"—or imperfect—abstractions on the system design and verification process;
(d) rigorous exploration of and use of advanced optimization methods in very large, multi-dimensional design trade-spaces; these trade spaces may not be mathematically well-behaved, e.g., smooth, continuous, constant dimensional spaces;
(e) representation of components and contexts using an existing or novel formal modeling language and the rapid assessment of the impact of different component and context model libraries on the design;
(f) abstraction of manufacturing constraints and imposition of resultant manufacturability "design rules" on the design trade-space;
(g) rapid redesign of portions of the system to accommodate changes in component or manufacturing capability or performance objectives;
(h) synthesis of designs that are "correct-by-construction," i.e., that require minimal redesign due to emergent behaviors or unexpected interactions;

(i) a virtual modeling and simulation design recursion approach for verification needs as opposed to a build, test, and fix approach.
(j) > 5X compression in the design schedule versus the status quo approach as applied to a complex ground combat vehicle, airplane, or rotorcraft.

Technical Area Five: Verification flow & tools

Develop a verification approach and enabling tools that generate probabilistic "certificates of correctness" for entire large-scale cyber-physical systems such as ground combat vehicles, airplanes, or rotorcraft based on stochastic formal methods, scaling no faster than linearly with problem complexity. The goal is to be able to generate entire systems, expressed in a formal metalanguage, which can be built-to-print with the very first unit correct-by-construction without resorting to incremental integration testing, except as needed to construct the initial component model library.

At minimum, the verification flow and enabling toolset shall support the following:
(a) calculation of a probabilistic "certificate of correctness" for the system through model verification to a given level of confidence, given the uncertainty in the component models;
(b) the reverse calculation of (a)—i.e., based on a desired system-level probability of system correctness, the calculation of required component model fidelity;
(c) the assurance or calculation of probability with which given design rules or manufacturability constraints will be met;
(d) co-verification of software and electromechanical components of the system;
(e) rapid re-certification of a system upon configuration changes due to intentional adaptation, failure, or degradation;
(f) an estimate of reliability (and the uncertainty in the estimate) for the entire cyber-physical system can be computed with minimal real-world system testing to include single- and multi-mode failure scenarios;
(g) verification accomplished with > 5X compression in schedule versus the status quo for comparable systems.

Deliverables

Offerors should propose an appropriate schedule of reviewable milestones, along with appropriate criteria by which progress can be assessed, to occur on a monthly basis. In addition to milestone-specific criteria, general technical and financial progress will be assessed at these reviews. DARPA reserves the right to conduct the technical portions of these reviews in the form of "PI meetings" to include other performers on this and related efforts.

DARPA desires to receive complete, fully functional algorithms, software tools, documentation, supporting models and datasets, and use cases implementing the capability developed under each technical area. The final version of these deliverables must be supplied to the Government no later than the end of the period of performance. The delivery of interim versions as milestone deliverables is strongly encouraged.

DARPA desires Unlimited Rights to all deliverables (except commercially available software) to enable their industry-wide promulgation following the conclusion of the META-II program. This will be an explicit factor in proposal evaluation (see Section V) and proposers should structure their development accordingly, especially where heritage intellectual property is included. DARPA anticipates releasing the language and toolset developed in the course of this effort to the DoD community and industrial base under an open source license at the conclusion of the META-II program.

No later than the end of the period of performance, the performer shall deliver a final report in the form of: (1) a technical manuscript of publishable quality and suitable for publication in a peer-reviewed journal documenting their technical progress and results achieved in significant detail, and (2) a programmatic final report containing financial data and other information not suitable for publication but appropriate for program documentation and planning.

DARPA anticipates funding the META-II effort with RDT&E Budget Activity 2 ("6.2"), Applied Research funds enabling academic institutions performing work on campus to participate without pre-publication review restrictions.

II. AWARD INFORMATION

Multiple awards are anticipated. The amount of resources made available to this BAA will depend on the quality of the proposals received and the availability of funds. Proposals identified for negotiation may result in a procurement contract or other transaction depending upon the nature of the work proposed, the required degree of interaction between parties, and other factors.

In addition, the Government reserves its rights to the following:

- to select for negotiation all, some, one, or none of the proposals received in response to this solicitation,
- to make awards without discussions with offerors,
- to conduct discussions if it is later determined to be necessary,
- to segregate portions of resulting awards into pre-priced options,
- to accept proposals in their entirety or to select only portions of proposals for award,
- to fund proposals in phases with options for continued work at the end of one or more of the phases,
- to request any additional, necessary documentation once it makes the award instrument determination; such additional information may include but is not limited to Representations and Certifications; and,
- to remove offerors from award consideration should the parties fail to reach agreement on award terms, conditions and cost/price within a reasonable time or the offeror fails to timely provide requested additional information.

As of the date of publication of this BAA, DARPA expects that program goals for this BAA may be met by offerors intending to perform "fundamental research," i.e., basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from industrial

development, design, production, and product utilization the results of which ordinarily are restricted for proprietary or national security reasons. Notwithstanding this statement of expectation, DARPA is not prohibited from considering and selecting research proposals that, while perhaps not qualifying as "fundamental research" under the foregoing definition, still meet the BAA criteria for submissions. In all cases, the Contracting Officer shall have sole discretion to select award instrument type and to negotiate all instrument provisions with selectees.

III. ELIGIBILITY INFORMATION

A. Eligible Applicants

All responsible sources capable of satisfying the Government's needs may submit a proposal that shall be considered by DARPA. Historically Black Colleges and Universities (HBCUs), Small Businesses, Small Disadvantaged Businesses and Minority Institutions (MIs) are encouraged to submit proposals and join others in submitting proposals; however, no portion of this announcement will be set aside for these organizations' participation due to the impracticality of reserving discrete or severable areas of this research for exclusive competition among these entities.

Federally Funded Research and Development Centers (FFRDCs) and Government entities (Government/National laboratories, military educational institutions, etc.) are subject to applicable direct competition limitations and cannot propose to this BAA in any capacity unless they meet the following conditions. FFRDCs must clearly demonstrate that the work is not otherwise available from the private sector AND they also provide a letter on letterhead from their sponsoring organization citing the specific authority establishing their eligibility to propose to government solicitations and compete with industry, and compliance with the associated FFRDC sponsor agreement and terms and conditions. This information is required for FFRDCs proposing to be prime or subcontractors. Government entities must clearly demonstrate that the work is not otherwise available from the private sector and provide written documentation citing the specific statutory authority (as well as, where relevant, contractual authority) establishing their ability to propose to Government solicitations. At the present time, DARPA does not consider 15 U.S.C. 3710a to be sufficient legal authority to show eligibility. While 10 U.S.C. 2539b may be the appropriate statutory starting point for some entities, specific supporting regulatory guidance, together with evidence of agency approval, will still be required to fully establish eligibility. DARPA will consider eligibility submissions on a case-by-case basis; however, the burden to prove eligibility for all team members rests solely with the Proposer.

Foreign participants and/or individuals may participate to the extent that such participants comply with any necessary Non-Disclosure Agreements, Security Regulations, Export Control Laws, and other governing statutes applicable under the circumstances.

Applicants considering classified submissions (or requiring access to classified information during the life-cycle of the program) shall ensure all industrial, personnel, and information system processing security requirements are in place and at the appropriate level (e.g., Facility Clearance (FCL), Personnel Security Clearance (PCL), certification and accreditation (C&A))

and any Foreign Ownership Control and Influence (FOCI) issues are mitigated prior to such submission or access. Additional information on these subjects can be found at: www.dss.mil.

1. **Procurement Integrity, Standards of Conduct, Ethical Considerations, and Organizational Conflicts of Interest**

Current federal employees are prohibited from participating in particular matters involving conflicting financial, employment, and representational interests (18 USC 203, 205, and 208.). The DARPA Program Manager for this BAA is Mr. Paul Eremenko.

Once the proposals have been received, and prior to the start of proposal evaluations, the Government will assess potential conflicts of interest in regards to the DARPA Program Manager, as well as those individuals chosen to evaluate proposals received under this BAA, and will promptly notify the offeror if any appear to exist. (Please note the Government assessment does NOT affect, offset, or mitigate the offeror's own duty to give full notice and planned mitigation for all potential organizational conflicts, as discussed below.)

All Proposers and proposed subcontractors must affirm whether they are providing scientific, engineering, and technical assistance (SETA) or similar support to any DARPA technical office(s) through an active contract or subcontract. All affirmations must state which office(s) the Proposer supports and identify the prime contract numbers. Affirmations shall be furnished at the time of proposal submission. All facts relevant to the existence or potential existence of organizational conflicts of interest (FAR 9.5) must be disclosed. The disclosure shall include a description of the action the Proposer has taken or proposes to take to avoid, neutralize, or mitigate such conflict. In accordance with FAR 9.503 and without prior approval or a waiver from the DARPA Director, a Contractor cannot simultaneously be a SETA and Performer. **Proposals that fail to fully disclose potential conflicts of interests and/or do not have plans to mitigate this conflict will be rejected without technical evaluation and withdrawn from further consideration for award.**

If a prospective Proposer believes that any conflict of interest exists or may exist (whether organizational or otherwise), the Proposer should promptly raise the issue with DARPA by sending Proposer's contact information and a summary of the potential conflict by email to the mailbox address for this BAA DARPA-BAA-10-59@darpa.mil, before time and effort are expended in preparing a proposal and mitigation plan. If, in the sole opinion of the Government after full consideration of the circumstances, any conflict situation cannot be effectively mitigated, the proposal may be rejected without technical evaluation and withdrawn from further consideration for award under this BAA.

B. Cost Sharing or Matching

Cost sharing is not required for this particular program; however, cost sharing will be carefully considered where there is an applicable statutory condition relating to the selected funding instrument (e.g., for any Other Transactions under the authority of 10 U.S.C. § 2371). Cost sharing is encouraged where there is a reasonable probability of a potential commercial application related to the proposed research and development effort.

IV. APPLICATION AND SUBMISSION INFORMATION

A. Address to Request Application Package

This solicitation contains all information required to submit a proposal. No additional forms, kits, or other materials (other than those noted within this document) are needed. This notice constitutes the total BAA. No additional information is available, nor will a formal Request for Proposal (RFP) or additional solicitation regarding this announcement be issued. Requests for same will be disregarded.

B. Content and Form of Application Submission

1. Security and Proprietary Issues

The Government anticipates proposals submitted under this BAA will be unclassified.

NOTE: If proposals are classified, the proposals must indicate the classification level of not only the proposal itself, but also the anticipated award document classification level.

The Government anticipates proposals submitted under this BAA will be unclassified. However, if a proposal is submitted as "Classified National Security Information" as defined by Executive Order 13526 as amended, then the information must be marked and protected as though classified at the appropriate classification level and then submitted to DARPA for a final classification determination.

Proposers choosing to submit a classified proposal from other classified sources must first receive permission from the respective Original Classification Authority in order to use their information in replying to this BAA. Applicable classification guide(s) should also be submitted to ensure the proposal is protected at the appropriate classification level.

Classified submissions shall be appropriately and conspicuously marked with the proposed classification level and declassification date. Submissions requiring DARPA to make a final classification determination shall be marked as follows:

CLASSIFICATION DETERMINATION PENDING. Protect as though classified (insert the recommended classification level: (e.g., Top Secret, Secret or Confidential)

Classified submissions shall be in accordance with the following guidance:

Confidential and Secret Collateral Information: Use classification and marking guidance provided by previously issued security classification guides, the Information Security Regulation (DoD 5200.1-R), and the National Industrial Security Program Operating Manual (DoD 5220.22-M) when marking and transmitting information previously classified by another Original Classification Authority. Classified information at the Confidential and Secret level may be mailed via appropriate U.S. Postal Service methods (e.g., (USPS) Registered Mail or

USPS Express Mail). All classified information will be enclosed in opaque inner and outer covers and double wrapped. The inner envelope shall be sealed and plainly marked with the assigned classification and addresses of both sender and addressee. The inner envelope shall be address to:

Defense Advanced Research Projects Agency
ATTN: (Name of the Technical Office)
Reference: (BAA Number)
3701 North Fairfax Drive
Arlington, VA 22203-1714

The outer envelope shall be sealed with no identification as to the classification of its contents and addressed to:

Defense Advanced Research Projects Agency
Security & Intelligence Directorate, Attn: CDR
3701 North Fairfax Drive
Arlington, VA 22203-1714

All Top Secret materials: Top Secret information should be hand carried by an appropriately cleared and authorized courier to the DARPA CDR. Prior to traveling, the courier shall contact the DARPA CDR at 571 218-4842 to coordinate arrival and delivery.

Special Access Program (SAP) Information: SAP information must be transmitted via approved methods. Prior to transmitting SAP information, contact the DARPA SAPCO at 703-526-4052 for instructions.

Sensitive Compartmented Information (SCI): SCI must be transmitted via approved methods. Prior to transmitting SCI, contact the DARPA Special Security Office (SSO) at 703-248-7213 for instructions.

Proprietary Data: All proposals containing proprietary data should have the cover page and each page containing proprietary data clearly marked as containing proprietary data. It is the Proposer's responsibility to clearly define to the Government what is considered proprietary data.

Security classification guidance via a DD Form 254 will not be provided at this time since DARPA is soliciting ideas only. After reviewing the incoming proposals, if a determination is made that the award instrument may result in access to classified information a DD Form 254 will be issued and attached as part of the award.

Proposers must have existing and in-place prior to execution of an award, approved capabilities (personnel and facilities) to perform research and development at the classification level they propose. It is the policy of DARPA to treat all proposals as competitive information, and to disclose their contents only for the purpose of evaluation. Proposals will not be returned. The

original of each proposal received will be retained at DARPA and all other non-required copies destroyed. A certification of destruction may be requested, provided the formal request is received at this office within 5 days after unsuccessful notification.

Proprietary Data: All responses containing proprietary data should be appropriately marked. It is the respondent's responsibility to clearly define to the Government what they consider to be proprietary data.

2. Proposal Information

DARPA will accept unclassified proposals submitted under this BAA by mail or hand-delivery. Proposals must be submitted to:

Attn: DARPA-BAA-10-59
Paul Eremenko
DARPA/TTO
3701 North Fairfax Drive
Arlington, VA 22203-1714

Proposals must be submitted in hard copy, with one signed original and seven (7) copies plus two (2) electronic copies on PC formatted CD-ROMs. Each copy must be clearly labeled with DARPA-BAA-10-59, proposer organization, proposal title (short title recommended), and copy X of N.

Facsimile or electronic submissions will not be accepted.

For hand deliveries, the courier should deliver the package to the DARPA Visitor Control Center at the address specified above. The outer package, as well as the cover page of the proposal, must be marked "DARPA-BAA-10-59."

Responses to this BAA will not be returned.

3. Proposal Preparation and Format

The proposal shall be delivered in a single volume including both technical and cost information. Proposals not meeting the format described in this BAA may not be reviewed.

The proposal shall include the following sections, each starting on a new page (where a "page" is 8-1/2 by 11 inches with type not smaller than 12 point, charts may use 10 point font, margins not smaller than 1 inch, and line spacing not smaller than single-spaced). Fold-outs up to 11 by 17 inches may be used but will be counted as two pages. All submissions must be in English. Individual elements of the proposal shall not exceed the total of the maximum page lengths for each section as shown in braces { } below.

Ensure that each section provides the detailed discussion of the proposed work necessary to enable an in-depth review of the specific technical and managerial issues. Specific attention must be given to addressing both risk and payoff of the proposed work that make it desirable to DARPA.

Proposal Section 1. Administrative

1.1 Cover Sheet {no page limit}

- BAA number;
- Technical area(s);
- Lead organization submitting proposal;
- Type of business, selected among the following categories:
    - WOMEN-OWNED LARGE BUSINESS,
    - OTHER LARGE BUSINESS,
    - SMALL DISADVANTAGED BUSINESS [identify ethnic group from among the following: Asian-Indian American, Asian-Pacific American, Black American, Hispanic American, Native American, or Other],
    - WOMEN-OWNED SMALL BUSINESS,
    - OTHER SMALL BUSINESS,
    - HBCU,
    - MI,
    - OTHER EDUCATIONAL,
    - OTHER NONPROFIT, OR
    - FOREIGN CONCERN/ENTITY;

- All other team members (if applicable and including second- and lower-tier subcontractors) and type of business for each;
- Proposal title;
- Technical point of contact to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax, and electronic mail;
- Administrative point of contact to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax, and electronic mail;
- Award instrument requested: cost-plus-fixed-free (CPFF), cost-contract—no fee, cost sharing contract – no fee, or other type of procurement contract (*specify*), or other transaction;
- Place(s) and period(s) of performance;
- Summary of the costs of the proposed research, including total base cost, estimates of base cost in each year of the effort, estimates of itemized options in each year of the effort, and cost sharing if relevant;
- Name, address, and telephone number of the offeror's cognizant Defense Contract Management Agency (DCMA) administration office (*if known)*;
- Name, address, and telephone number of the offeror's cognizant Defense Contract Audit Agency (DCAA) audit office (*if known*);
- Date proposal was prepared;
- DUNS number;
- TIN number;
- Cage Code;
- Proposal validity period (minimum 180 days).

1.2 Table of Contents {no page limit}

1.3 Organizational Conflict of Interest Affirmations and Disclosure {no page limit}
Per the instructions in Section III.A.1 above, if the offeror or any proposed sub IS providing SETA support, as described, to any DARPA technical office(s) through an active contract or subcontract (regardless of which DARPA technical office is being supported), they must provide documentation: 1) stating which office(s) the offeror, sub and/or individual supports, 2) identify the prime contract numbers AND 3) include a description of the action the offeror has taken or proposes to take to avoid, neutralize, or mitigate the conflict.

If the offeror or any proposed sub IS NOT currently providing SETA support as described, then the offeror should simply state "NONE."

Proposals that fail to fully disclose potential conflicts of interests or do not have acceptable plans to mitigate identified conflicts will be rejected without technical evaluation and withdrawn from further consideration for award.

1.4 Human Use {no page limit}
For all proposed research that will involve human subjects in the first year or phase of the project, the institution must provide evidence of or a plan for review by an Institutional Review Board (IRB) upon final proposal submission to DARPA. For further information on this subject, see Section VI.B.3 below. If human use is not a factor in a proposal, then the offeror should state "NONE."

1.5 Animal Use {no page limit}
For submissions containing animal use, proposals must briefly describe plans for Institutional Animal Care and Use Committee (IACUC) review and approval. For further information on this subject, see Section VI.B.4 below. If animal use is not a factor in a proposal, then the offeror should state "None."

1.6 Statement of Unique Capability Provided by Government or Government-Funded Team Member {no page limit}
Per section III.A. – Eligible Applicants, proposals which include Government or Government-funded entities (i.e., FFRDC's, National laboratories, etc.) as prime, sub or team member, shall provide a statement which clearly demonstrates the work being provided by the Government or Government-funded entity team member is not otherwise available from the private sector. If none of the team members belongs to a Government or Government-funded entity, then the offeror should state "Not Applicable."

1.7 Government or Government-funded Team Member Eligibility {no page limit}
Per section III.A. – Eligible Applicants, proposals which include Government or Government-funded entities (i.e., FFRDC's, National laboratories, etc.) as prime, sub or team member shall provide documentation citing the specific authority which establishes they are eligible to propose to Government solicitations: 1) statutory authority; 2) contractual authority; 3) supporting regulatory guidance; AND 4) evidence of agency approval. If no such entities are involved, then the offeror should state "None."

Proposal Section 2. Technical Details

2.1 PowerPoint Summary Chart {1 page}:
Provide a one slide summary of the proposal in PowerPoint that effectively and succinctly conveys the main objective, key innovations, expected impact, proposer team, and other unique aspects of the proposal.

2.2 Innovative Claims for the Proposed Research {4 pages}:
This page is the centerpiece of the proposal and should succinctly describe the unique proposed approach and contributions. This section may also *briefly* address the following topics:

a. Problem Description. Provide a concise description of the problem areas addressed. Make this specific to your approach.
b. Research Goals. Identify specific research goals. Goals should address the technical challenges of the effort.
c. Expected Impact. Describe and justify the expected impact of your research.

2.3 Technical Approach {15 pages}:
Provide a detailed description of the technical approach. This section will serve as the primary expression of the offeror's scientific and technical ideas. It should also include the offeror's understanding of the state of the art approaches and the limitations that relate to each topic addressed by the proposal. Describe and analyze state of the art results, approaches, and limitations within the context of the problem area addressed by this research. Demonstrating problem understanding requires not just the enumeration of related efforts; rather, related work must be compared and contrasted to the proposed approach.

2.4 Intellectual Property {No page limit}
Per section VI.B.1 below, offerors responding to this BAA must submit a separate list of all technical data or computer software that will be furnished to the Government with other than unlimited rights. The Government will assume unlimited rights if offerors fail to identify any intellectual property restrictions in their proposals. Include in this section all proprietary claims to results, prototypes, deliverables or systems supporting and/or necessary for the use of the research, results, prototypes and/or deliverables. If no restrictions are intended, then the offeror should state "NONE".

2.5 Management Plan {5 Pages}:
Describe formal teaming agreements that are required to execute this program, a brief synopsis of all key personnel, and a clearly defined organization chart for the program team (prime contractor and subcontractors, if any). Provide an argument that the team size and composition are both necessary and sufficient to meet the program objectives. Provide detailed task descriptions, costs, and interdependencies for each individual effort and/or subcontractor. To the extent that graduate students and postdocs are involved in individual efforts, describe their role and contribution. Information in this section must cover the following information:

a. Programmatic relationship of team members;
b. Unique capabilities of team members;
c. Task responsibilities of team members;
d. Teaming strategy among the team members;

e. Key personnel along with the amount of effort to be expended by each person during each year; and
f. Government role in project, if any.

2.6 Personnel, Qualifications, and Commitments {5 pages}:
List key personnel, showing a concise summary of their qualifications. Provide a description of any previous accomplishments or similar efforts completed/ongoing in this or closely related research area, including identification of other Government sponsors, if any.

Indicate the level of effort in terms of hours to be expended by each person during each contract year and other (current and proposed) major sources of support for them and/or commitments of their efforts. DARPA expects all key personnel associated with a proposal to make substantial time commitment to the proposed activity and the proposal will be evaluated accordingly. It is DARPA's intention to put key personnel clauses into the contracts, so offerors should not bid personnel whom they do not intend to execute the contract.

Include a table of key individual time commitments as follows:

Key Individual	Project	Pending/Current	2010	2011	2012
Jane Doe	Program Name	Proposed	X hours	Y hours	Z hours
	Project 1	Current	n/a	n/a	n/a
	Project 2	Pending	100 hours	n/a	n/a
John Deer	Program Name	Proposed			

2.7 Schedule and Milestones {6 pages}:
This section should include:
a. {2 pages} Schedule Graphic. Provide a graphic representation of project schedule including detail down to the individual effort level. This should include but not be limited to a coherent development plan, which demonstrates a clear understanding of the proposed research; and a plan for periodic and increasingly robust tests over the project life that will show applicability to the overall program concept. Show all project milestones. Use "x months after contract award" designations for all dates.
b. {2 pages} Detailed Task Descriptions. Provide detailed task descriptions for each discrete work effort and/or subcontractor in schedule graphic.
c. {2 pages} Cost Summary. Provide a top level total cost summary for the entire program. Show each major task and subtask by month and delineate prime and major subcontractor efforts.

2.8 Statement of Work (SOW) {no page limit}:
In plain English, clearly define the technical tasks/subtasks to be performed, their durations, and dependencies among them. For each task/subtask, provide:
- A general description of the objective (for each defined task/activity);
- A detailed description of the approach to be taken to accomplish each defined task/activity);
- Identification of the primary organization responsible for task execution (prime, sub, team member, by name, etc.);

- The completion criteria for each task/activity—a product, event or milestone that defines its completion;
- Define all deliverables (reports, data, software, hardware, prototypes, etc.) to be provided to the Government in support of the proposed research tasks/activities. Include expected delivery date for each deliverable.

Do not include any proprietary information in the SOW or include any markings placing limitations on distribution on the pages containing the SOW.

Proposal Section 3. Cost

3.1 Detailed Cost Breakdown {no page limit}

Provide: (1) total program cost broken down by major cost items (direct labor, including labor categories; subcontracts; materials; other direct costs, overhead charges, etc.) and further broken down by task and phase; (2) major program tasks by fiscal year; (3) an itemization of major subcontracts and equipment purchases; (4) an itemization of any information technology (IT) purchase[1]; (5) a summary of projected funding requirements by month; and (6) the source, nature, and amount of any industry cost-sharing; (7) identification of pricing assumptions of which may require incorporation into the resulting award instrument (e.g., use of Government Furnished Property/Facilities/Information, access to Government Subject Matter Expert/s, etc.) and 8) provide appropriate cost or price analyses of subcontractor proposals, IAW FAR 15.404-3, to establish the reasonableness of proposed subcontract prices.

The prime contractor is responsible for compiling and providing all subcontractor proposals for the Procuring Contracting Officer (PCO). Subcontractor proposals should include Interdivisional Work Transfer Agreements (ITWA) or similar arrangements. Where the effort consists of multiple portions which could reasonably be partitioned for purposes of funding, these should be identified as options with separate cost estimates for each. NOTE: for IT and equipment purchases, include a letter stating why the offeror cannot provide the requested resources from its own funding.

Provide supporting cost and pricing information in sufficient detail to substantiate the summary cost estimates above. Include a description of the method used to estimate costs and supporting

[1] IT is defined as "any equipment, or interconnected system(s) or subsystem(s) of equipment that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information by the agency. (a) For purposes of this definition, equipment is used by an agency if the equipment is used by the agency directly or is used by a contractor under a contract with the agency which – (1) Requires the use of such equipment; or (2) Requires the use, to a significant extent, or such equipment in the performance of a service or the furnishing of a product. (b) The term "information technology" includes computers, ancillary, software, firmware and similar procedures, services (including support services), and related resources. (c) The term "information technology" does not include – (1) Any equipment that is acquired by a contractor incidental to a contract; or (2) Any equipment that contains imbedded information technology that is used as an integral part of the product, but the principal function of which is not the acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information. For example, HVAC (heating, ventilation, and air conditioning) equipment such as thermostats or temperature control devices, and medical equipment where information technology is integral to its operation, is not information technology."

documentation. Note: "cost or pricing data" as defined in FAR Subpart 15.4 shall be required if the offeror is seeking a procurement contract award of $650,000 or greater unless the offeror requests an exception from the requirement to submit cost or pricing data. "Cost or pricing data" are not required if the offeror proposes an award instrument other than a procurement contract (e.g., other transaction). All proprietary subcontractor proposal documentation, prepared at the same level of detail as that required of the prime, shall be made immediately available to the Government, upon request, under separate cover (i.e., mail, electronic/email, etc.), either by the offeror or by the subcontractor organization.

For information on 845 Other Transaction Authority for Prototypes (OTA) agreements, refer to http://www.darpa.mil/cmo/other_trans.html. All proposers requesting an 845 Other Transaction Authority for Prototypes (OTA) agreement must include a detailed list of milestones. Each such milestone must include the following: milestone description, completion criteria, due date, payment/funding schedule (to include, if cost share is proposed, contractor and Government share amounts). It is noted that, at a minimum, such milestones should relate directly to accomplishment of program technical metrics as defined in the BAA and/or the offeror's proposal. Agreement type, fixed price or expenditure based, will be subject to negotiation by the Agreements Officer; however, it is noted that the Government prefers use of fixed price milestones with a payment/funding schedule to the maximum extent possible. Do not include proprietary data. If the proposer requests award of an 845 OTA agreement as a nontraditional defense contractor, as so defined in the OSD guide entitled "Other Transactions (OT) Guide For Prototype Projects" dated January 2001 (as amended) (http://www.acq.osd.mil/dpap/Docs/otguide.doc), information must be included in the cost proposal to support the claim. Additionally, if the offeror requests award of an 845 OTA agreement, without the required one-third (1/3) cost share, information must be included in the cost proposal supporting that there is at least one non-traditional defense contractor participating to a significant extent in the proposed prototype project.

C. Submission Dates and Times

The full proposal must be submitted per the instructions in Section IV.B - Content and Form of Application Submission above by 1200 noon (ET) on June 4, 2010 (initial closing), in order to be considered during the initial evaluation phase. While DARPA-BAA-10-59 will remain open until 1200 noon (ET) October 12, 2010 (final closing date/BAA expiration), offerors are warned that the likelihood of funding is greatly reduced for proposals submitted after the initial closing date.

DARPA will acknowledge receipt of complete submissions via e-mail and assign control numbers that should be used in all further correspondence regarding proposals.

Failure to comply with the submission procedures may result in the submission not being evaluated.

D. Intergovernmental Review - N/A

E. Funding Restrictions

The Defense Appropriations Act caps indirect cost rates at 35% of the total cost of the award for any procurement contract, grant or agreement using 6.1 Basic Research Funding. The cost limitations do not flow down to subcontractors. Total costs include all bottom line costs. Indirect costs are defined as follows:

- For Educational Institutions subject to the cost principles in 2 CFR part 220, indirect costs are all costs of a prime award that are Facilities and Administration costs.

- For State, Local, and Indian Tribal Governments subject to 2 CFR part 225, Non-Profit Organizations subject to 2 CFR part 230 and all other organizations subject to 48 CFR part 32 Federal Acquisition Regulation, indirect cost are any cost not directly identified with a single final cost objective (i.e. costs identified with two or more final cost objectives or with at least one intermediate cost objective).

DARPA currently anticipates using 6.2 funding for this program.

F. Other Submission Requirements

Proposals MUST NOT be submitted to DARPA via email or fax (see Submission instructions above in Section IV.B).

V. APPLICATION REVIEW INFORMATION

A. Evaluation Criteria

Evaluation of proposals will be accomplished through a scientific review of each proposal using the criteria listed below. The criteria are listed in descending order of relative importance. Proposals will not be evaluated against each other since they are not submitted in accordance with a common work statement. DARPA's intent is to review proposals as soon as possible after they arrive; however, proposals may be reviewed periodically for administrative reasons.

1. Overall Scientific and Technical Merit

The proposed technical approach is feasible, achievable, complete and supported by a proposed technical team that has the expertise and experience to accomplish the proposed tasks. The offeror's proposal will be evaluated on the long term effects of the proposed research including the impact on technology, whether there is sufficient technical payoff to warrant any risk and the offeror's ability to meet program metrics. The expertise and experience of the offeror's proposed technical team will be evaluated based upon the qualifications of the key personnel proposed for the effort and their previous accomplishments on similar efforts.

2. Potential Contribution and Relevance to the DARPA Mission

The potential contributions of the proposed effort with relevance to the national technology base will be evaluated. Specifically, DARPA's mission is to maintain the technological superiority of the U.S. military and prevent technological surprise from harming our national security by sponsoring revolutionary, high-payoff research that bridges the gap between fundamental discoveries and their application. Proposers must address mitigation of life-cycle and sustainment risks associated with transitioning intellectual property for U.S. military applications.

3. Intellectual Property

The extent to which intellectual property (IP) rights limitations placed on the proposer's technology and deliverables comport with DARPA's objectives or create a barrier to technology transition to the research, industrial, and operational military communities.

4. Cost Realism

The objective of this criterion is to establish that the proposed costs are realistic for the technical and management approach offered, as well as to determine the proposer's practical understanding of the effort. The proposal will be reviewed to determine if the costs proposed are based on realistic assumptions, reflect a sufficient understanding of the technical goals and objectives of the BAA, and are consistent with the proposer's technical approach (to include the proposed Statement of Work). At a minimum, this will involve review, at the prime and subcontract level, of the type and number of labor hours proposed per task as well as the types and kinds of materials, equipment and fabrication costs proposed.

NOTE: OFFERORS ARE CAUTIONED THAT EVALUATION RATINGS MAY BE LOWERED AND/OR PROPOSALS REJECTED IF SUBMITTAL INSTRUCTIONS ARE NOT FOLLOWED.

B. Review and Selection Process

It is the policy of DARPA to ensure impartial, equitable, comprehensive proposal evaluations and to select the source (or sources) whose offer meets the Government's technical, policy, and programmatic goals. Pursuant to FAR 35.016, the primary basis for selecting proposals for acceptance shall be technical, importance to agency programs, and fund availability. In order to provide the desired evaluation, qualified Government personnel will conduct reviews and (if necessary) convene panels of experts in the appropriate areas.

Any awards under this BAA will be made to offerors on the basis of the evaluation criteria listed herein including the potential contributions of the proposed work to the overall research program, the availability of funding for the effort and program balance.

Restrictive notices notwithstanding, offerors are advised that employees of commercial firms under contract to the Government may be used by DARPA to administratively process proposals, monitor contract performance, or perform other administrative duties requiring access to other contractors' proprietary information. These support contracts include nondisclosure agreements prohibiting their contractor employees from disclosing any information submitted by other

contractors or using such information for any purpose other than that for which it was furnished. By submission of its proposal, each offeror agrees that proposal information may be disclosed to those non-Government personnel for the limited purposes stated above. In addition, these support contractors are prohibited from competition in DARPA technical research. Subject to the restrictions set forth in FAR 37.203(d), input on technical aspects of the proposals may be solicited by DARPA from non-Government consultants /experts who are strictly bound by the appropriate non-disclosure requirements.

It is the policy of DARPA to treat all proposals as competitive information and to disclose their contents only for the purpose of evaluation. No proposals will be returned. Upon completion of the scientific review process, the original of each proposal received will be retained at DARPA and all other copies will be destroyed.

VI. AWARD ADMINISTRATION INFORMATION

A. Award Notices

As soon as the evaluation of a proposal is complete, the offeror will be notified that 1) the proposal has been selected for funding pending contract negotiations, or, 2) the proposal has not been selected. These official notifications will be sent via US mail to the Technical POC identified on the proposal coversheet.

B. Administrative and National Policy Requirements

1. Intellectual Property

a. Procurement Contract Offerors

i. Noncommercial Items (Technical Data and Computer Software)

Offerors responding to this BAA requesting a procurement contract to be issued under the FAR/DFARS shall identify all noncommercial technical data and noncommercial computer software that it plans to generate, develop, and/or deliver under any proposed award instrument in which the Government will acquire less than unlimited rights, and to assert specific restrictions on those deliverables. Offerors shall follow the format under DFARS 252.227-7017 for this stated purpose. In the event that offerors do not submit the list, the Government will assume that it automatically has "unlimited rights" to all noncommercial technical data and noncommercial computer software generated, developed, and/or delivered under any award instrument, unless it is substantiated that development of the noncommercial technical data and noncommercial computer software occurred with mixed funding. If mixed funding is anticipated in the development of noncommercial technical data and noncommercial computer software generated, developed, and/or delivered under any award instrument, then offerors should identify the data and software in question, as subject to Government Purpose Rights (GPR). In accordance with DFARS 252.227-7013 Rights in Technical Data - Noncommercial Items, and DFARS 252.227-7014 Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation, the Government will automatically assume that any such

GPR restriction is limited to a period of five (5) years in accordance with the applicable DFARS clauses, at which time the Government will acquire "Unlimited Rights" unless the parties agree otherwise. Offerors are admonished that the Government may use the list during the scientific review process to evaluate the impact of any identified restrictions and may request additional information from the offeror, as may be necessary, to evaluate the offeror's assertions. If no restrictions are intended, then the offeror should state "NONE."

A sample list for complying with this request is as follows:

NONCOMMERCIAL			
Technical Data Computer Software To be Furnished With Restrictions	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(LIST)	(LIST)	(LIST)	(LIST)

ii. Commercial Items (Technical Data and Computer Software)

Offerors responding to this BAA requesting a procurement contract to be issued under the FAR/DFARS shall identify all commercial technical data and commercial computer software (including open source software) that may be embedded in, or that may create linkages affecting distribution rights to, any noncommercial deliverables contemplated under the research effort, along with any applicable restrictions on the Government's use of such commercial technical data and/or commercial computer software. In the event that offerors do not submit the list, the Government will assume that there are no restrictions on the Government's use of such commercial items. The Government may use the list during the scientific review process to evaluate the impact of any identified restrictions and may request additional information from the offeror, as may be necessary, to evaluate the offeror's assertions. If no restrictions are intended, then the offeror should state "NONE."

A sample list for complying with this request is as follows:

COMMERCIAL			
Technical Data Computer Software To be Furnished With Restrictions	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(LIST)	(LIST)	(LIST)	(LIST)

b. Non-Procurement Contract Offerors – Noncommercial and Commercial Items (Technical Data and Computer Software)

Offerors responding to this BAA requesting an Other Transaction shall follow the applicable rules and regulations governing these various award instruments, but in all cases should appropriately identify any potential restrictions on the Government's use of any Intellectual Property contemplated under those award instruments in question. This includes both Noncommercial Items and Commercial Items. Although not required, offerors may use a format

similar to that described above. The Government may use the list during the scientific review process to evaluate the impact of any identified restrictions, and may request additional information from the offeror, as may be necessary, to evaluate the offeror's assertions. If no restrictions are intended, then the offeror should state "NONE."

c. All Offerors – Patents

Include documentation proving your ownership of or possession of appropriate licensing rights to all patented inventions (or inventions for which a patent application has been filed) that will be utilized under your proposal for the DARPA program. If a patent application has been filed for an invention that your proposal utilizes, but the application has not yet been made publicly available and contains proprietary information, you may provide only the patent number, inventor name(s), assignee names (if any), filing date, filing date of any related provisional application, and a summary of the patent title, together with either: 1) a representation that you own the invention, or 2) proof of possession of appropriate licensing rights in the invention.

d. All Offerors – Intellectual Property Representations

Provide a good faith representation that you either own or possess appropriate licensing rights to all other intellectual property that will be utilized under your proposal for the DARPA program. Additionally, offerors shall provide a short summary for each item asserted with less than unlimited rights that describes the nature of the restriction and the intended use of the intellectual property in the conduct of the proposed research.

2. Meeting and Travel Requirements

Offerors should identify travel requirements appropriate to their proposed execution plan. In general, milestone reviews will be held at locations of the offeror's choosing, except that occasional "PI meetings" to include other performers on this and related efforts may be held in major metropolitan areas in the continental United States.

3. Human Use

All research involving human subjects, to include use of human biological specimens and human data, selected for funding must comply with the federal regulations for human subject protection. Further, research involving human subjects that is conducted or supported by the DoD must comply with 32 CFR 219, *Protection of Human Subjects* (http://www.dtic.mil/biosys/downloads/32cfr219.pdf), and DoD Directive 3216.02, *Protection of Human Subjects and Adherence to Ethical Standards in DoD-Supported Research* (http://www.dtic.mil/whs/directives/corres/html2/d32162x.htm).

Institutions awarded funding for research involving human subjects must provide documentation of a current Assurance of Compliance with Federal regulations for human subject protection, for example a Department of Health and Human Services, Office of Human Research Protection Federal Wide Assurance (http://www.hhs.gov/ohrp). All institutions engaged in human subject research, to include subcontractors, must also have a valid Assurance. In addition, personnel involved in human subjects research must provide documentation of completing appropriate training for the protection of human subjects.

For all proposed research that will involve human subjects in the first year or phase of the project, the institution must provide evidence of or a plan for review by an Institutional Review Board (IRB) upon final proposal submission to DARPA. The IRB conducting the review must be the IRB identified on the institution's Assurance. The protocol, separate from the proposal, must include a detailed description of the research plan, study population, risks and benefits of study participation, recruitment and consent process, data collection, and data analysis. Consult the designated IRB for guidance on writing the protocol. The informed consent document must comply with federal regulations (32 CFR 219.116). A valid Assurance, along with evidence of appropriate training for all investigators, should accompany the protocol for review by the IRB.

In addition to a local IRB approval, a headquarters-level human subjects regulatory review and approval is required for all research conducted or supported by the DoD. The Army, Navy, or Air Force office responsible for managing the award can provide guidance and information about their component's headquarters-level review process. Note that confirmation of a current Assurance and appropriate human subjects protection training is required before headquarters-level approval can be issued.

The amount of time required to complete the IRB review/approval process may vary depending on the complexity of the research and/or the level of risk to study participants. Ample time should be allotted to complete the approval process. The IRB approval process can last for one to three months, followed by a DoD review that can last for three to six months. No DoD/DARPA funding can be used toward human subjects research until ALL approvals are granted.

4. Animal Use

Any Recipient performing research, experimentation, or testing involving the use of animals shall comply with the rules on animal acquisition, transport, care, handling, and use in: (i) 9 CFR parts 1-4, Department of Agriculture rules that implement the Laboratory Animal Welfare Act of 1966, as amended, (7 U.S.C. 2131-2159); (ii) the guidelines described in National Institutes of Health Publication No. 86-23, "Guide for the Care and Use of Laboratory Animals"; (iii) DoD Directive 3216.01, "Use of Laboratory Animals in DoD Program."

For submissions containing animal use, proposals should briefly describe plans for Institutional Animal Care and Use Committee (IACUC) review and approval. Animal studies in the program will be expected to comply with the PHS Policy on Humane Care and Use of Laboratory Animals, available at http://grants.nih.gov/grants/olaw/olaw.htm.

All Recipients must receive approval by a DoD certified veterinarian, in addition to an IACUC approval. No animal studies may be conducted using DoD/DARPA funding until the USAMRMC Animal Care and Use Review Office (ACURO) or other appropriate DoD veterinary office(s) grant approval. As a part of this secondary review process, the Recipient will be required to complete and submit an ACURO Animal Use Appendix, which may be found at https://mrmc.amedd.army.mil/AnimalAppendix.asp

5. Publication Approval

It is the policy of the Department of Defense for products of fundamental research to remain unrestricted to the maximum extent possible. The definition of Contracted Fundamental Research is:

"Contracted Fundamental Research includes [research performed under] grants and contracts that are (a) funded by budget category 6.1 (Basic Research), whether performed by universities or industry or (b) funded by budget category 6.2 (Applied Research) and performed on-campus at a university. The research shall not be considered fundamental in those rare and exceptional circumstances where the applied research effort presents a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense, and where agreement on restrictions have been recorded in the contract or grant." Such research is referred to by DARPA as "Restricted Research."

Research performed under grants and contracts that are (a) funded by budget category 6.2 (Applied Research) and NOT performed on-campus at a university or (b) funded by budget category 6.3 (Advanced Research) does not meet the definition of fundamental research. Publication restrictions will be placed on all such research.

It is anticipated that the performance of research resulting from the BAA is fundamental research.

For certain research projects, it may be possible that although the research being performed by the Prime Contractor is Restricted Research, a subcontractor may be conducting Contracted Fundamental Research. In those cases, it is the Prime Contractor's responsibility to explain in their proposal why its subcontractor's effort is Contracted Fundamental Research.

The following (or similar) provision will be incorporated into any resultant Restricted Research or Non-Fundamental Research procurement contract or other transaction:

There shall be no dissemination or publication, except within and between the Contractor and any subcontractors, of information developed under this contract or contained in the reports to be furnished pursuant to this contract without prior written approval of the DARPA Technical Information Officer (DARPA/TIO). All technical reports will be given proper review by appropriate authority to determine which Distribution Statement is to be applied prior to the initial distribution of these reports by the Contractor. With regard to subcontractor proposals for Contracted Fundamental Research, papers resulting from unclassified contracted fundamental research are exempt from prepublication controls and this review requirement, pursuant to DoD Instruction 5230.27 dated October 6, 1987.

> When submitting material for written approval for open publication, the Contractor/Awardee must submit a request for public release to the DARPA TIO and include the following information: 1) Document Information: document title, document author, short plain-language description of technology discussed in the material (approx. 30 words), number of pages (or minutes of video) and document type (briefing, report, abstract, article, or paper); 2) Event Information: event type (conference, principle

investigator meeting, article or paper), event date, desired date for DARPA's approval; 3) DARPA Sponsor: DARPA Program Manager, DARPA office, and contract number; and 4) Contractor/Awardee's Information: POC name, e-mail and phone. Allow four weeks for processing; due dates under four weeks require a justification. Unusual electronic file formats may require additional processing time. Requests can be sent either via e-mail to tio@darpa.mil or via 3701 North Fairfax Drive, Arlington VA 22203-1714, telephone (571) 218-4235. Refer to www.darpa.mil/tio for information about DARPA's public release process.

6. Export Control

Should this project develop beyond fundamental research (basic and applied research ordinarily published and shared broadly within the scientific community) with military or dual-use applications the following apply:

- The Contractor shall comply with all U. S. export control laws and regulations, including the International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120 through 130, and the Export Administration Regulations (EAR), 15 CFR Parts 730 through 799, in the performance of the contract or agreement. In the absence of available license exemptions/exceptions, the Contractor shall be responsible for obtaining the appropriate licenses or other approvals, if required, for exports (including deemed exports) of hardware, technical data, and software, or for the provision of technical assistance.
- The Contractor shall be responsible for obtaining export licenses, if required, before utilizing foreign persons in the performance of this contract, including instances where the work is to be performed on-site at any Government installation (whether in or outside the United States), where the foreign person will have access to export-controlled technologies, including data or software.
- The Contractor shall be responsible for all regulatory record keeping requirements associated with the use of licenses and license exemptions/exceptions.
- The Contractor shall be responsible for ensuring that the provisions of this clause apply to its subcontractors**.**

7. Subcontracting

Pursuant to Section 8(d) of the Small Business Act (15 U.S.C. 637(d)), it is the policy of the Government to enable small business and small disadvantaged business concerns to be considered fairly as subcontractors to contractors performing work or rendering services as prime contractors or subcontractors under Government contracts, and to assure that prime contractors and subcontractors carry out this policy. Each offeror who submits a contract proposal and includes subcontractors is required to submit a subcontracting plan in accordance with FAR 19.702(a) (1) and (2) should do so with their proposal. The plan format is outlined in FAR 19.704.

8. Central Contractor Registration (CCR)

Offerors selected, but not already registered in the Central Contractor Registry (CCR) will be required to register in CCR prior to any award under this BAA. Information on CCR registration is available at http://www.ccr.gov

9. On-line Representations and Certifications (ORCA)

In accordance with FAR 4.1201, prospective offerors shall complete electronic annual representations and certifications at http://orca.bpn.gov.

10. Wide Area Work Flow (WAWF)

Unless using another approved electronic invoicing system, performers will be required to submit invoices for payment directly via the Internet/WAWF at http://wawf.eb.mil. Registration to WAWF will be required prior to any award under this BAA.

11. Electronic and Information Technology

All electronic and information technology acquired through this solicitation must satisfy the accessibility requirements of Section 508 of the Rehabilitation Act (29 U.S.C. 794d) and FAR Subpart 39.2. Each offeror who submits a proposal involving the creation or inclusion of electronic and information technology must ensure that Federal employees with disabilities will have access to and use of information that is comparable to the access and use by Federal employees who are not individuals with disabilities and members of the public with disabilities seeking information or services from DARPA will have access to and use of information and data that is comparable to the access and use of information and data by members of the public who are not individuals with disabilities.

12. Employment Eligibility Verification

As per FAR 22.1802, recipients of FAR-based procurement contracts must enroll as Federal Contractors in E-verify and use E-Verify to verify employment eligibility of all employees assigned to the award. All resultant contracts from this solicitation will include FAR 52.222-54, "Employment Eligibility Verification." This clause will not be included in grants, cooperative agreements, or Other Transactions.

C. Reporting

The number and types of reports will be specified in the award document, but will include as a minimum monthly financial and technical status reports and an annual project summary. Reports and briefing material will also be required as appropriate to document progress in accomplishing program metrics. These shall be prepared and submitted in accordance with the procedures contained in the award document. A Final Report that summarizes the project and tasks will be required at the conclusion of the performance period for the award, notwithstanding the fact that the research may be continued under a follow-on vehicle. There may also be additional reporting requirements for Other Transactions. At least one copy of each report will be delivered to DARPA and not merely placed on an internet site.

I-Edison

All required invention and patent reporting shall be accomplished, as applicable, using the i-Edison.gov reporting website at http://s-edison.info.nih.gov/iEdison.

VII. AGENCY CONTACTS

DARPA will use electronic mail for all technical and administrative correspondence regarding this BAA, with the exception of selected/not-selected notifications.

Administrative, technical or contractual questions should be sent via e-mail to DARPA-BAA-10-59@darpa.mil. If e-mail is not available, please fax questions to (703) 741-0634, Attention: META-II Solicitation. All requests must include the name, email address, and phone number of a point of contact.

Solicitation web site: http://www.darpa.mil/tto/solicitations/index.html.